IN THE CLAIMS:

PLEASE CANCEL CLAIMS 1-41 AND ADD THE FOLLOWING CLAIMS:

42. A method of regulating the rotation speed, of a motor having a digital rotation speed controller, which motor, during operation, furnishes an actual-value signal for the rotation speed, in the form of a rotation speed frequency signal, toward a target rotation speed,

comprising the steps of:

in a first time segment, obtaining from the rotation speed frequency signal, a first numerical frequency value that characterizes the rotation speed of the motor;

in a second time segment that is substantially simultaneous with the first time segment, obtaining, from a target value frequency signal, a second numerical frequency value that characterizes the frequency of the target value frequency signal; and

by means of the first and second numerical frequency values, regulating, using the digital speed controller, the rotation speed of the motor toward a rotation speed that is associated with the target value frequency signal according to a predefined mathematical relationship.

43. The method according to claim 42, further comprising,

in order to obtain said first and second numerical frequency values, measuring a time interval between defined events of the respective frequency signal.

44. The method according to claim 43, wherein

said time interval measuring comprises measuring a time interval between edges of the respective frequency signal.

45. The method according to claim 43, further comprising using an identical time standard for time measurement for

obtaining the first numerical frequency value and for time measurement for obtaining the second numerical frequency value.

46. The method according to claim 43, of measuring the frequency of a frequency signal which, at a constant frequency, comprises a fixed number of events per unit time, selected from the group consisting of signal pulses and signal edges,

comprising the steps of:

a) at a first predetermined instant, initiating measurement of a frequency datum;

b) ascertaining a second instant, at which an event of the frequency signal subsequent to the first predetermined instant occurs;

c) counting the number of events of the frequency signal subsequent to the second instant;

d) at a third predetermined instant, initiating termination of measurement of the frequency datum;

e) ascertaining a fourth instant, at which an event of the frequency signal subsequent to the third predetermined instant occurs; and

f) calculating the frequency datum from the time interval between the second instant and fourth instant, and from the number of events of the frequency signal counted between said instants.

47. The method according to claim 46, wherein

said step of ascertaining the fourth instant comprises using the next event of the frequency signal as the event subsequent to the third predetermined instant.

48. The method according to claim 46, further comprising, for ascertaining the fourth instant, selecting, as the event subsequent to the third predetermined instant, that next event of the frequency signal at which the number of events since the second instant is equal to a product a * N, where a and N are whole numbers, of which one is equal to at least 1 and the other is equal to at least 2.

49. The method according to claim 48, wherein, in the case of a rotation speed frequency signal (f), the number N corresponds to a fixed number of events per revolution of the rotor.

50. The method according to claim 46, further comprising continuously measuring said first and second numerical frequency values.

51. The method according to claim 50, wherein the first predetermined instants of successive measurements have defined time offsets (T_A); and

wherein the third predetermined instants each have a substantially constant time offset from the associated first predetermined instants.

52. The method according to claim 50, wherein the third predetermined instant of a first measurement corresponds to the first predetermined instant of a second measurement subsequent thereto.

53. The method according to claim 52, wherein the fourth instant of a first measurement corresponds to the second instant of a second measurement subsequent thereto.

54. The method according to claim 46, further comprising calculating a frequency datum by dividing the number (N) of events of the frequency signal between the second and fourth instants by the time interval (Δt) between said second and fourth instants.

55. The method according to claim 54, further comprising the step of multiplying the rotation speed datum by multiplication with a constant factor.

56. The method according to claim 55, further comprising selecting the constant factor such that the rotation speed datum substantially corresponds to a conventional rotation speed indication.

57. The method according to claim 54, further comprising dividing a numerator proportional to the number of pulses between the second and fourth instants by a denominator proportional to the time interval between the second and fourth instants, obtaining, as a result, an integral frequency datum and a remainder; and

using the remainder by adding it to the numerator of the subsequent measurement.

58. A method of obtaining a datum concerning the rotation speed of a rotor, according to claim 46, further comprising the steps of:

a) during a first measurement period (T_M1), counting the number (N) of events of the rotation speed signal (f);

b) measuring the time duration (Δt) of the first measurement period (T_M1);

c) performing an integral division ("div") in which the number of events during the first measurement period (T_M1) is the numerator and the time duration of the first measurement period (T_M1) is the denominator, thereby obtaining a first integral rotation speed datum and a remainder (S372; S472); and

d) during a subsequent measurement, adding said remainder (REM_n_OLD; REM_n_s_OLD) to the numerator in a subsequent integral division forming part of said subsequent measurement.

59. The method according to claim 58, wherein the number (N) of events prior to the integral division (S372; S472) is multiplied by a constant factor that is greater than 1, in order to obtain a result of the integral division that is large in relation to the remainder (REM_n; REM_n_s).

60. The method according to claim 59, wherein the constant factor is a power of two (2^h; 2^h_s).

61. The method according to claim 60, wherein the exponent (h; h_s) of the power of two is an adjustable variable.

62. An apparatus for regulating rotation speed in a device having a rotor, comprising

a sensor (61) which furnishes a rotation speed signal (f) indicating a defined number of events for each revolution of the rotor,

a source (23) of control signals,

a counter (INT_CNT_f) which counts events indicated by the rotation speed signal (f); and

a program-controlled apparatus (23) for analyzing the aforesaid signals by executing the following steps:

a) initiating measurement of a rotation speed datum in response to a first control signal;

b) ascertaining a first instant, at which an event of the rotation speed signal (f) subsequent to the first control signal occurs;

c) counting the number of subsequent events of the rotation speed signal (f) in the counter (INT_CNT_f) for events of the rotation speed signal (f);

d) initiating termination of measurement of the rotation speed datum in response to a second control signal;

e) ascertaining a second instant, at which an event of the rotation speed signal (f) subsequent to the second control signal occurs;

f) calculating a rotation speed datum from the time interval (Δt_MEAS_f(175-177)) between the first instant (161) and second instant (163), and from the number (N) of events of the rotation speed signal (f) between said two instants; and

g) using the thus-calculated rotation speed datum in regulating rotation speed.

63. The apparatus according to claim 62, wherein the source of the control signals comprises a timer (TIMERØ).

64. The apparatus according to claim 63, wherein the timer (TIMERØ) is configured so as to trigger interrupt operations (TIMERØ Interrupt) as control signals.

65. The apparatus according to claim 62, further comprising a timer (TIMER1) which measures time elapsed between the first and second instants.

66. The apparatus according to claim 65, wherein the timer (TIMER1) which measures the time between the first and second instants is configured as a ring counter.

67. The apparatus according to claim 66, wherein the ring counter (TIMER1) counts continuously, and the end of a completed measurement is substantially contemporaneous with the beginning of a new measurement.

68. The apparatus according to claim 62, wherein a signal from an electronically commutated motor serves as the rotation speed signal.

69. The apparatus according to claim 62, wherein a counter (INT_CNT_f) for events of the rotation speed signal (f) is provided in the program-controlled apparatus (23).

70. An apparatus according to claim 62, wherein said program-controlled apparatus responds to application of a target value frequency of zero by regulating rotation speed to zero.

71. A method of controlling the rotation speed of a motor which has a rotor and a rotation speed controller, comprising the steps of

generating a rotation speed frequency signal (f) having a frequency proportional to the rotation speed of the rotor;

generating a target value frequency signal (f_s); and controlling the rotation speed of the rotor in such a way that the frequency of the rotation speed frequency signal (f) and the frequency of the target value frequency signal (f_s) are at a defined ratio (y/z) to one another.

72. The method according to claim 71, wherein the ratio between the frequencies (f) and (f_s) is influenced by at least one parameter.

73. The method according to claim 72, wherein the ratio between the frequencies (f) and (f_s) is defined in the controller by means of at least one parameter (X; Y).

74. The method according to claim 73, further comprising the step of storing the at least one parameter in a nonvolatile memory.

75. A method of ascertaining frequency based upon a plurality of sensed signals (f and f_s), said signals indicating a sequence of events selected from the group consisting of signal pulses and signal edges, comprising the steps of:

a) for at least two of said signals, initiating measurement of their frequency at a first predetermined instant;

b) for each of said signals, ascertaining a second instant, at which a frequency datum of said signal subsequent to the first predetermined instant occurs;

c) separately sensing the number of events of each of said signals subsequent to the second instant;

d) at a third predetermined instant, initiating termination of measurement of the frequency of said signals;

e) for each of said signals, ascertaining a fourth instant, at which a frequency datum of said signal subsequent to the third predetermined instant occurs;

f) from the time interval between the second instant and fourth instant, and from the number of frequency data of the respective signal between said instants, calculating, for each of said signals, a magnitude characterizing its frequency.

76. The method according to claim 75, further comprising, in order to ascertain the fourth instant,

selecting the next frequency datum of the signal as the frequency datum subsequent to the third predetermined instant.

77. The method according to claim 75, further comprising, in order to ascertain the fourth instant, selecting, as the frequency datum subsequent to the third predetermined instant, that next frequency datum of the signal at which the number of frequency data since the second instant corresponds to an integral multiple of a whole number from the series 2, 3, 4, ...

78. The method according to claim 75, wherein frequency measurements are performed continuously and the third predetermined instants each have a substantially constant time offset (T_A) from the associated first predetermined instants.

79. The method according to claim 78, wherein the third predetermined instant of the measurement of a signal corresponds to the first predetermined instant of a subsequent measurement.

80. The method according to claim 78, wherein the fourth instant of a measurement corresponds to the second instant of a subsequent measurement of the same signal.

81. The method according to claim 75, wherein the first predetermined instants, for initiating measurement of the plurality of signals, are substantially identical to each other.

82. The method according to claim 75, wherein the third predetermined instants, for initiating termination of the measurement of the plurality of signals, are substantially identical to each other.